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| APPLICATION NO.   | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|---------------------|------------------|
| 10/043,318  | 01/14/2002  | Nabuaki Abe          | P21596              | 6294             |
| 7055  | 7590        | 02/22/2006           | EXAMINER            |                  |
| GREENBLUM & BERNSTEIN, P.L.C.<br>1950 ROLAND CLARKE PLACE<br>RESTON, VA 20191 |             |                      | NGUYEN, HAU H       |                  |
|   |             |                      | ART UNIT            | PAPER NUMBER     |
|   |             |                      | 2676                |                  |

DATE MAILED: 02/22/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                           |                     |
|------------------------------|---------------------------|---------------------|
| <b>Office Action Summary</b> | <b>Application No.</b>    | <b>Applicant(s)</b> |
|                              | 10/043,318                | ABE, NABUAKI        |
|                              | Examiner<br>Hau H. Nguyen | Art Unit<br>2676    |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 03 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 24 October 2005.
- 2a) This action is FINAL.                    2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) 2-30 is/are allowed.
- 6) Claim(s) 1 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) All    b) Some \* c) None of:
    1. Certified copies of the priority documents have been received.
    2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

|   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                    | Paper No(s)/Mail Date: _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date: _____ | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
|   | 6) <input type="checkbox"/> Other: _____                                    |

***Response to Arguments***

1. Applicant's arguments filed 10/24/2005 have been fully considered but they are not persuasive. In response to Applicant's arguments that the cited reference Koshiba et al. (U.S. Patent No. 6,836,289) does not teach the second interpolation processor does not modify at least one the first color signals by using the second color signal, the examiner disagrees. In fact, as cited in the previous Office Action, Koshiba et al. teach the main roles of vertical interpolation sub-module 1008 are to execute a part of vertical interpolation sequence and vertical noise filter (col. 30, lines 46-48). FIG. 10g shows an example of the output of this vertical interpolation sub-module for a RGB Bayer CCD. When the vertical noise filter can be applied and it is set on, original data (the first color signal) (R in this figure) is also adjusted in order to keep a correlation to the other color (G in this figure) (col. 31, lines 4-8).

***Allowable Subject Matter***

2. Claims 2-30 are allowed.

***Reasons for Allowable Subject Matter***

3. The following is an examiner's statement of reasons for allowable subject matter:

The prior art taken singly or in combination does not teach or suggest, an image interpolating device among other things, comprising:

a first interpolation/modification processor that extracts a first similar pixel which has the closest luminance value to that of said first objective pixel, from pixels adjacent to said first objective pixel, obtains a third B-signal of said first objective pixel by a first interpolation process, and modifies said second G-signal and said first R-signal of said first objective pixel, based on first information of said first similar pixel;

a second interpolation/modification processor that extracts a second similar pixel which has value to that of said fourth objective pixel, from pixels adjacent the closest luminance to said fourth objective pixel, obtains a third R-signal of said fourth objective pixel by a second interpolation process, and modifies said second G-signal and said first B-signal of said fourth objective pixel , based on second information of said second similar pixel.

The closest prior art, Chen (U.S. Patent No. 6,570,616) teaches a color filter, an image device, a pattern generating, a first G-interpolation processor, a second R/B interpolation processor. However, reference Chen does not teach the above features.

***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claim 1 is rejected under 35 U.S.C. 102(e) as being anticipated by Koshiba et al. (U.S. Patent No. 6,836,289).

Referring to claim 1, Koshiba et al. teach an image device having a light receiving surface on which pixel are disposed in a matrix arrangement, a subject image is formed on the light receiving surface to generate first color signals corresponding to the subject image in the pixels (see Figs. 7a and 7b, col. 4, lines 60-67, and col. 5, lines 1-15). Koshiba et al. further teach CFA (color filter array) interpolation for a Bayer pattern (FIG. 7a) uses the high-frequency from

the green channel to modify the red and blue channel interpolations to reduce the aliasing components at edges within the image by utilizing the signal of the other color channels (col. 11, lines 2-6). As shown in Fig. 10c, Koshiba et al. teach a first interpolation processor (horizontal interpolation 1004, Fig. 10a) that performs a first interpolation process, using the first color signals to obtain a second color signal of the object pixel (col. 29, lines 34-55). As shown in Fig. 10e, Koshiba et al. teach a second interpolation processor 1008, performing a second interpolation process using the color signal of the objective pixel to modify at least one of the first color signals (color adjustment) (col. 30, lines 10-40, and col. 31, lines 4-8).

### *Conclusion*

2. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

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3. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hau H. Nguyen whose telephone number is: 571-272-7787. The examiner can normally be reached on MON-FRI from 8:30-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Hjerpe can be reached on (571) 272-7691.

The fax number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system contact the Electronic Business Center (EBC) at 866-2 17-9197 (toll-free).

H. Nguyen

02/15/2006



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